



RHODE ISLAND CHILDHOOD LEAD POISONING PREVENTION PROGRAM
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ADDITIONAL LEAD POISONING DATA CAN BE FOUND AT WWW.HEALTH.RI.GOV/LEAD

MAKE HEALTH PART OF YOUR FAMILY
RHODE ISLAND DEPARTMENT OF HEALTH

CHILDHOOD
LEAD POISONING
IN RHODE ISLAND:
THE NUMBERS
2006 EDITION

RHODE ISLAND DEPARTMENT OF HEALTH



LETTER FROM THE DIRECTOR

Dear Colleague:

As each year passes, we get closer to eliminating childhood lead poisoning, which we committed to do by the end of 2010. As we move forward however, it is important to ensure that lead poisoning remains at the forefront of the public's mind and that we continue to support primary prevention efforts. During the previous year, there have been two events that have drawn media attention to the issue of childhood lead poisoning and primary prevention.

- » In November 2005, the Lead Hazard Mitigation Law was successfully implemented. This new legislation increases knowledge about lead poisoning by requiring property owners to take a Lead Hazard Awareness Class and improves housing conditions by requiring property owners to obtain and maintain a Certificate of Conformance for each of their properties. By the end of 2005, 17,000 property owners had taken the class, and more than 3,000 Certificates of Conformance had been issued. As more property owners comply with the law, more children will be protected from lead.
- » In February 2006, the jury in the trial brought against the lead paint manufacturers by the State of Rhode Island found three companies liable for creating a public nuisance by manufacturing and distributing lead-based paint. The manufacturers were ordered to clean up the lead paint that was used on thousands of properties in Rhode Island generations ago.

These two events are milestones in our goal to eliminate childhood lead poisoning. Their outcomes are in line with our primary prevention efforts and our “healthy housing” approach. However, we will never achieve elimination without providing safe, healthy, and affordable housing for Rhode Islanders. As a result, our goal is two-fold: to eliminate childhood lead poisoning, and in doing so, provide all Rhode Island children with safe and affordable housing.

The Rhode Island Department of Health is committed to achieving this goal, but we cannot do it alone. The Housing Resources Commission (HRC) has already committed to support us in our efforts; however, we also need a commitment from other agencies. Currently, there is a great deal of positive energy throughout the state around the issues of lead poisoning and healthy housing. I ask that you use that energy to foster new partnerships and seek opportunities to build relationships across housing and health agencies. With continued collaboration and cooperation, we will eliminate childhood lead poisoning by the end of 2010.

Sincerely,



David R. Gifford, MD, MPH

Director, Rhode Island Department of Health



CHILDHOOD LEAD POISONING IN RHODE ISLAND: THE NUMBERS 2006 EDITION

RHODE ISLAND DEPARTMENT OF HEALTH

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ELIMINATING CHILDHOOD LEAD POISONING BY THE END OF 2010

In 2004, Rhode Island developed a Plan to Eliminate Childhood Lead Poisoning by the end of 2010. This Plan focuses on promoting primary prevention while maintaining secondary prevention efforts in the state. Primary prevention reduces or eliminates lead hazards in the environment before a child is exposed. Secondary prevention includes universal screening of children to identify those with elevated blood lead levels (BLL), and in turn removing or reducing any further exposure to the child. The Plan also describes the strategic shift from a health approach to a healthy housing approach. Progress toward elimination was to be evaluated by two factors: the incidence of lead poisoning and the availability of lead safe, affordable housing. The lack of comprehensive, quality, housing data makes measuring the housing component infeasible.

To address this need for housing data, the Rhode Island Childhood Lead Poisoning Prevention Program (RI CLPPP) and the state's housing agency, Rhode Island Housing Resources Commission (HRC) established the "Healthy Housing Collaborative," a group composed of housing-related agencies throughout the state.

In addition to establishing the Healthy Housing Collaborative, the two agencies also have agreed to:

- » Use the Healthy Housing Collaborative as an advisory board;
- » Develop a vision statement for "healthy housing" in the state;
- » Conduct a literature review on healthy housing issues;
- » Prepare reports on the impact of unhealthy housing on child health and development;
- » Assess the benefits associated with improved housing maintenance and building practices;
- » Conduct a cost benefit analysis of building and maintaining healthy homes;
- » Conduct an assessment of state resources currently allocated to healthy housing; and
- » Conduct an assessment of major strategic plans in the state to identify overlapping goals and opportunities for partnership and collaboration.

With this new strategy in place, Rhode Island has formulated measures for reporting progress towards its goal. With input from RI CLPPP's Advisory Committee, the Environmental Lead Interagency Council, and other partners, RI CLPPP has developed its strategy, detailed on the next page.

GOAL: To eliminate childhood lead poisoning in Rhode Island by the end of 2010.

MILESTONE: To decrease the number of new cases of lead poisoning (BLL of ≥ 10 $\mu\text{g/dL}$) in children under six years of age in Rhode Island without displacing children, decreasing screening rates, or decreasing access to affordable housing.



FOUR MEASURES THAT WILL JOINTLY DETERMINE PROGRESS IN THE ELIMINATION GOAL:

1. Decrease in the number of new cases of lead poisoned children ($BLL \geq 10 \mu\text{g/dL}$) in the state from 621 at the end of 2005 to:
 - » 520 at the end of 2006
 - » 420 at the end of 2007
 - » 320 at the end of 2008
 - » 220 at the end of 2009
 - » 120 at the end of 2010¹
2. Maintenance of screening rates² as follows:
 - » Maintaining the number of 18 month old children screened for lead at least once, at 70% or more.
 - » Maintaining the number of 36 month old children screened for lead at least twice, a minimum of 12 months apart at 40% or more.
3. Availability of affordable housing, to be measured by:
 - » Developing proxies to measure affordable housing by the end of 2006. Potential measures may include the number of subsidized housing units by city and town, and the progress made by cities and towns on achieving affordable housing goals.
 - » Utilizing those proxy measures by the end of 2007.
 - » Refining measures of affordable housing by the end of 2008, and continuing to use these measures through 2010.
4. Displacement of children to be measured by public data sets (e.g. KIDSNET data, free school lunch).

REPORT: RI CLPPP will prepare an annual report that will include data on each of the above measures to assess progress made towards its goal to eliminate lead poisoning. The Annual Report will be issued in May 2007 for the first time and each May thereafter. This report will also acknowledge cities and towns that are working towards the elimination goal. Cities and towns will be recognized as having taken steps towards the elimination of lead poisoning when they:

1. Provide the Rhode Island Department of Health and the Housing Resources Commission with an electronic annual report that includes a list of addresses of units in their jurisdiction considered to be low and moderate income housing. These reports can be submitted in conjunction with updated reports submitted to the Housing Resources Commission under the Low and Moderate Housing Act;
2. Provide the Rhode Island Department of Health and the Housing Resources Commission with a standardized electronic file of unique addresses, with homeownership status for all properties/units. Addresses must be compatible with Geographic Information Systems (GIS) software;
3. Identify ways to obtain an electronic version of addresses of homes in Rhode Island that are subsidized by Housing and Urban Development (HUD);
4. Work with the Rhode Island Department of Health and the Housing Resources Commission to gather the above mentioned data in a housing surveillance system.

1 No further Rhode Island cases of lead poisoning will be identified after January 1, 2011.

2 These screening rates are calculated for a specific birth cohort. Data included here are for the 2001 birth cohort.

2005 HIGHLIGHTS

IMPLEMENTATION OF THE LEAD HAZARD MITIGATION LAW

In November of 2005 Rhode Island implemented the Lead Hazard Mitigation Law, which set standards for the maintenance of pre-1978 rental properties in Rhode Island. The Law requires property owners to take a three-hour Lead Hazard Awareness Class, inspect their properties, repair lead hazards, and obtain a Certificate of Conformance signifying that the home is in compliance with the Mitigation Law. By the end of 2005, over 17,000 property owners had taken the three-hour Lead Hazard Awareness Class, and more than 3,000 Certificates of Conformance had been issued to owners of rental properties.

The Law also requires that the Rhode Island Department of Health maintain three public lists of properties: High Risk Premises, Properties with Multiple Poisonings, and Ongoing Violations. Additional information about these lists can be found on page 25. These lists are posted on the Rhode Island Department of Health website at www.health.ri.gov/lead and are updated regularly.

Further efforts to promote compliance with the law will continue in 2006.

CONTINUED PARTNERSHIP WITH MANAGED CARE ORGANIZATIONS

In 2002, the Rhode Island Childhood Lead Poisoning Prevention Program (RI CLPPP) entered into a partnership with three Managed Care Organizations (MCOs) that insure Medicaid/RIte Care populations. Partner MCOs identify children who have not been screened for lead by matching MCO data with RI CLPPP data. The MCOs then follow up on these children by contacting their primary care providers and encouraging them to screen the children for lead. This effort has been effective in increasing lead screening rates.

The Rhode Island Department of Human Services requires that MCOs report the percent of children on Medicaid turning 2 years of age who have been screened for lead. Medicaid has set the benchmark for this measure at 85%. The data exchange in 2005 revealed that the MCOs are very close to the benchmark, with a lead screening rate of 84% among their Medicaid population. The MCOs will continue to partner with RI CLPPP to enhance lead screening rates in Rhode Island.

ONGOING EFFORTS TO PROMOTE LEAD SCREENING

Although RI CLPPP emphasizes the importance of primary prevention efforts, the program continues to implement and support lead screening and other valuable secondary prevention efforts for children under the age of six. RI CLPPP uses KIDSNET, the state's integrated child health information system for the promotion and quality improvement of lead screening. KIDSNET houses data from several public health programs (i.e. Lead, WIC, Newborn Screening) and contains data on children born on or after January 1, 1997.

Currently, 127 of the 165 Rhode Island pediatric provider sites have access to KIDSNET and can use it to generate a report of their patients who are overdue for a lead test. Pediatricians can then follow up with these children to ensure that they get screened for lead.

UPDATED LEAD SCREENING AND CASE MANAGEMENT PLAN

The Lead Screening and Case Management Plan was originally developed in 2000, with input from RI CLPPP Advisory Committee. The Plan is comprehensive and contains information about all aspects of screening, non-medical case management, and environmental interventions. The Plan has recently been revised, and details the efforts, results, and expectations as they relate to lead screening and case management. The revised plan is available on the web at www.health.ri.gov/lead.

SCREENING HIGH-RISK REFUGEE POPULATIONS

Recognizing that refugees³ are a high-risk population for lead poisoning, RI CLPPP and the Refugee Health Program at the Rhode Island Department of Health entered into a Memorandum of Understanding to share data in March 2005. By matching data from the two programs, RI CLPPP can ensure that refugees receive appropriate screening and follow-up care. The Refugee Health Program and RI CLPPP also developed lead screening guidelines specifically for refugees, which have been made available to primary care providers who routinely see refugees upon arrival in the state. These guidelines are available on the web at www.health.ri.gov/lead.

"HEALTHY HOUSING" EDUCATIONAL EFFORT FOR NURSING STUDENTS

An eight-hour "healthy housing" training program was developed for community health nursing students at Rhode Island College. The training was tailored for nurses who plan to work for Rhode Island home visiting agencies in the future. The nursing students learned about several environmental health concerns, including lead, radon, and asthma. A Code Enforcement inspector educated the students about routine inspections and common housing code violations. The course also included a visit to a historic home site where the students were taught how to conduct a visual assessment of the home environment, and how to identify major health and safety hazards. They also learned about resources available to families when health hazards are identified in the home.

This training was successfully delivered in the Spring and in the Fall of 2005. The trainings have continued in 2006 and can hopefully be expanded to nursing programs in other local colleges and universities.



³ A refugee is a person who is outside his or her country of origin, or country in which he or she last resided, and who is unable or unwilling to return to that country because of persecution or a well-founded fear of persecution on account of race, religion, nationality, membership in a particular social group, or political opinion.

UNDERSTANDING BLOOD LEAD LEVELS

WHAT IS A LEVEL OF CONCERN?

A level of concern is the threshold used to define an elevated blood lead level. Children with a blood lead level greater than the level of concern (i.e. children with an elevated blood lead level) should be monitored and re-tested. Primary prevention activities, such as community-wide environmental interventions and nutritional and educational campaigns, should be directed at reducing children's blood lead levels below the level of concern. In 1991, the CDC set the level of concern as a blood lead level ≥ 10 $\mu\text{g/dL}$.

SHOULD WE LOWER THE BLOOD LEAD LEVEL OF CONCERN?

In response to questions about whether to change the level of concern based on recent research that found that blood lead levels lower than 10 $\mu\text{g/dL}$ can have harmful effects,^{4,5} CDC has prepared the following statement, which can be found on the website at www.cdc.gov/lead/qanda.htm:

“Recent studies suggest that adverse health effects exist in children at blood lead levels less than 10 $\mu\text{g/dL}$. In the past the CDC has lowered the level considered elevated in response to similar reports. However, at this time the reasons not to lower the level of concern are as follows:

- » No effective clinical interventions are known to lower the blood lead levels for children with levels less than 10 $\mu\text{g/dL}$ or to reduce the risk for adverse developmental effects.*
- » Children cannot be accurately classified as having blood lead levels above or below a value less than 10 $\mu\text{g/dL}$ because of the inaccuracy inherent in laboratory testing.*
- » Finally, no evidence exists of a threshold below which adverse effects are not experienced. Thus, any decision to establish a new level of concern would be arbitrary and provide uncertain benefits.*

These studies support making primary prevention of childhood lead poisoning a high priority for health, housing, and environmental agencies at the state, local, and federal levels.”

⁴ Canfield RL, Henderson CR, Cory-Slechta DA, Cox C, Jusko TA, Lanphear BP. Intellectual impairment in children with blood lead concentrations below 10mcg per Deciliter. *New England Journal of Medicine* 2003; 348:1517-26.

⁵ Selevan SG, Rice DC, Hogan KA, Euling SY, Pfahles-Hutchens A, Bethel J. Blood Lead Concentration and Delayed Puberty in Girls. *New England Journal of Medicine* 2003; 348:1527-36.

WHAT IS AN ACTION LEVEL?

An action level is the threshold at which interventions should be implemented based on evidence that the interventions are effective. It is impossible to define one action level for all interventions, so various action levels trigger different interventions. According to CDC guidelines, community prevention activities, such as nutritional and educational campaigns, should be implemented at blood lead levels ≥ 10 $\mu\text{g}/\text{dL}$, and individual prevention activities, such as case management and environmental investigations, should be implemented at blood lead levels ≥ 15 $\mu\text{g}/\text{dL}$.⁶ For example, while the overall goal is to reduce children's blood lead levels below 10 $\mu\text{g}/\text{dL}$, there are reasons for not implementing individual, environmental, and medical interventions for children with blood lead levels between 10 and 14 $\mu\text{g}/\text{dL}$:

- » Effective environmental and medical interventions for children with blood lead levels in this range have not yet been identified.
- » Given limited resources, the sheer number of children in this range would preclude effective case management and would detract from the individualized follow-up required by children with higher blood lead levels.

LEAD ACTION LEVELS IN RHODE ISLAND

The guidelines issued by CDC were used to define various action levels in Rhode Island. The different action levels are detailed in the table below.


CATEGORY	ACTION LEVEL	ACTION
ELEVATED BLOOD LEAD LEVEL	BLL between 10-14 $\mu\text{g}/\text{dL}$	CAPILLARY: Letter sent to Primary Care Provider recommending venous test to confirm the BLL*
		VENOUS: Letter sent to family inviting them to request a home visit through the Family Outreach Program*
	BLL between 15-19 $\mu\text{g}/\text{dL}$	CAPILLARY: Letter sent to Primary Care Provider recommending venous test to confirm the BLL
		VENOUS: Family is referred to a lead center** for an in-home lead education visit and some environmental intervention (i.e. temporary lead hazard control measures, window replacement)
SIGNIFICANT LEAD POISONING	One Venous BLL ≥ 20 $\mu\text{g}/\text{dL}$ ~ or ~ Two BLLs (Capillary or Venous) 15-19 $\mu\text{g}/\text{dL}$ done 90-365 days apart***	Family is referred to a lead center for an in-home lead education visit and is offered an environmental inspection

* In addition to the actions described, a letter is sent to families living in Providence ONLY, informing them that they can contact the city of Providence for a free environmental inspection of their home.

** A lead center is a non-profit agency funded by Medicaid that offers comprehensive non-medical case management services to families of children with lead poisoning.

*** Two venous blood lead levels 15-19 $\mu\text{g}/\text{dL}$ done between 90 and 365 days apart may also be referred to as "Persistent Lead Poisoning." As of January 1, 2006 the definition of persistent lead poisoning is defined as two VENOUS blood lead levels 15-19 $\mu\text{g}/\text{dL}$ done 90-365 days apart.

6 CDC. *Preventing Lead Poisoning in Young Children*. Atlanta: U.S. Department of Health and Human Services, 1991.



Primary prevention activities, such as community-wide environmental interventions and nutritional and educational campaigns, should be directed at reducing children's blood lead levels below the level of concern.

UNDERSTANDING THE LEAD DATA

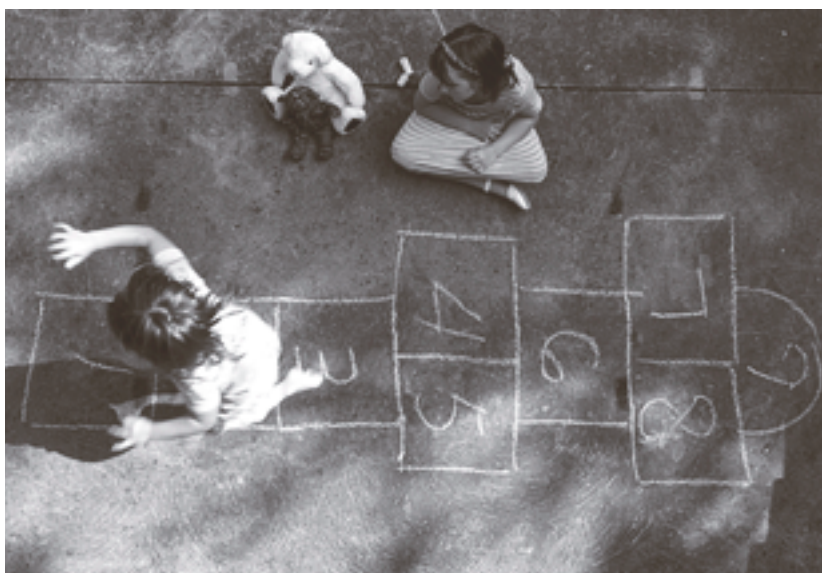
In Rhode Island, health care providers are required by law to annually screen their patients between nine months and six years of age for lead poisoning. The screening process involves collecting a sample of blood from the child, either from a capillary (finger stick) or a vein (venous test), and analyzing the blood to determine the amount of lead in the sample. Blood lead levels (BLL) are measured and reported as micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dL}$ or mcg/dL).

The data presented in this report are based on all blood lead results, both capillary and venous, performed on children from birth to six years of age in the state of Rhode Island.⁷ Although the guidelines recommend that children begin to be screened at nine months of age, some children may be screened earlier if they are at high risk for lead poisoning. For the incidence and prevalence analyses, each child is represented once per year in which he was screened.

CONFIRMED TESTS IN 2005

Prior to July 1, 2004, if a child under the age of six had a capillary blood lead test result $\geq 20 \mu\text{g}/\text{dL}$, the Rhode Island Department of Health would recommend that the child have a confirmatory venous test within three months. On July 1, 2004, the Rhode Island Department of Health revised the Lead Screening and Referral Guidelines and began recommending a confirmatory venous test for any child under the age of six who had a capillary blood lead level $\geq 10 \mu\text{g}/\text{dL}$ (instead of $\geq 20 \mu\text{g}/\text{dL}$). The Rhode Island Department of Health is also recommending that only venous tests be used for confirmatory testing purposes.

Since these changes went into effect in July 2004, the first full year for which RI CLPPP has confirmed capillary test data is 2005. As a result, 2005 data presented in this document are based on venous tests and confirmed capillary tests only. The data presented for previous years are based on all venous and capillary tests.



⁷ Given that calculations in this document are based on screening data rather than population data for all children under the age of six, the numbers presented here are estimates.

SCREENING FOR LEAD POISONING

In 2005, 33,156 children from birth to six years of age were tested for lead poisoning (includes screening and diagnostic tests).

CITY/TOWN	2003	2004	2005
BARRINGTON	667	679	683
BRISTOL	665	611	666
BURRILLVILLE	428	405	426
CENTRAL FALLS	1,133	1,135	1,199
CHARLESTOWN	232	202	199
COVENTRY	889	870	778
CRANSTON	1,939	1,958	1,922
CUMBERLAND	875	897	886
EAST GREENWICH	363	377	316
EAST PROVIDENCE	1,519	1,517	1,486
EXETER	141	140	119
FOSTER	109	98	118
GLOCESTER	161	166	185
HOPKINTON	242	252	219
JAMESTOWN	130	120	116
JOHNSTON	689	627	655
LINCOLN	499	492	465
LITTLE COMPTON	137	117	125
MIDDLETOWN	572	593	591
NARRAGANSETT	275	248	228
NEW SHOREHAM	25	31	28
NEWPORT	935	847	865
NORTH KINGSTOWN	856	810	735
NORTH PROVIDENCE	635	623	723
NORTH SMITHFIELD	226	240	208
PAWTUCKET	2,912	2,915	2,872
PORTSMOUTH	576	588	630
PROVIDENCE	8,797	8,753	8,319
RICHMOND	182	183	167
SCITUATE	278	258	286
SMITHFIELD	381	338	325
SOUTH KINGSTOWN	768	773	724
TIVERTON	502	541	520
WARREN	389	354	337
WARWICK	1,867	1,905	1,848
WEST GREENWICH	146	138	129
WEST WARWICK	843	855	836
WESTERLY	660	606	590
WOONSOCKET	1,743	1,751	1,578
UNKNOWN RI CITY/TOWN	38	88	54
STATEWIDE	34,424	34,101	33,156

Chart Notes: 1) Children are counted once each year, regardless of the number of times they are tested. 2) Highlighted cities are core cites, defined as cities where the child poverty level is greater than 15% (according to the 2000 Census). 3) The fluctuation in the number of children screened each year is influenced by several factors including, but not limited to the number of children born in Rhode Island each year, migration of children into and out of the state, and the number of children screened in compliance with the regulations. The regulations permit discontinuation of screening after age three if certain requirements are met (see Lead Screening and Referral Guidelines at www.health.ri.gov/lead).

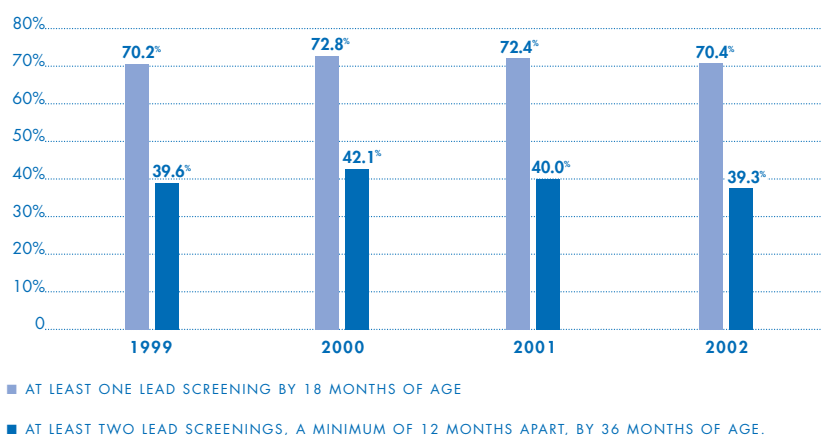
COMPLIANCE WITH LEAD SCREENING GUIDELINES

All healthcare providers in Rhode Island are required by law to annually screen their patients between nine months and six years of age for lead poisoning. Compliance with these guidelines is assessed by measuring the proportion of children born in a given year with at least one blood lead test by 18 months of age, and at least two blood lead tests, no less than 12 months apart, by 36 months of age.

Approximately 70% of children born in 1999 through 2002 were screened for lead poisoning at least once by 18 months of age, however only about 40% of these children were screened at least twice, no less than 12 months apart, by 36 months of age. Although the data have remained consistent over the last four years, efforts are still needed to improve screening among children 36 months of age.

The high screening rates among children 18 months of age in Rhode Island may be attributed to outreach efforts such as sending reminders to parents to have their children tested at the 12-month well-child visit, and pediatricians' access to KIDSNET, Rhode Island's integrated child health information system. KIDSNET allows health care providers to generate reports to monitor lead screening among their patients, and to generate reports of unscreened patients in their practice at any time. In 2005, 15 of 120 KIDSNET practices used this report.

PERCENT OF CHILDREN BEING SCREENED FOR LEAD IN COMPLIANCE WITH GUIDELINES, 1999-2002



SOURCE: KIDSNET DATABASE

Chart Notes: 1) Birth Cohorts beyond 2002 are not included here because those children had not yet turned 36 months of age by the time this report was prepared. 2) Screening compliance data among children 36 months of age presented in Childhood Lead Poisoning in Rhode Island, The Numbers, 2005 Edition, reflected children with at least two lead tests by 36 months of age. In this edition, the data reflect children with at least two lead tests, a minimum of twelve months apart.

LABORATORY CAPACITY FOR BLOOD LEAD SCREENING

The Rhode Island Department of Health Laboratory analyzes approximately 65% of all blood lead tests in the state. This includes both screening tests and diagnostic tests. The remaining 35% of blood lead tests are analyzed by laboratories associated with lead clinics.

A blood test is considered a **screening test** when a child has no signs or symptoms of lead poisoning, and has no previous blood lead test that indicates that he or she may be poisoned. Screening tests are performed in an effort to detect lead poisoning as early as possible.

A blood test is considered a **diagnostic test** when a child has signs or symptoms of lead poisoning or has had an elevated blood lead level in the past, indicating that he or she may be poisoned. Diagnostic tests are performed in an effort to confirm whether or not the child is lead poisoned.

In 2005, the Rhode Island Department of Health Laboratory completed 21,791 screening tests and 104 diagnostic tests. Two laboratories associated with lead clinics at Hasbro Children's Hospital and St. Joseph's Hospital provide free lead screening and laboratory analysis to uninsured children under the age of six.

**BLOOD LEAD TESTS ANALYZED BY THE RHODE ISLAND DEPARTMENT OF HEALTH
LABORATORY, 2003-2005**

	2003	2004	2005
SCREENING TESTS	24,037	23,145	21,791
DIAGNOSTIC TESTS	239	144	104
TOTAL	24,276	23,289	21,895

LEAD POISONING AMONG CHILDREN

ENTERING KINDERGARTEN

Rhode Island state law requires health care professionals to screen all children for lead poisoning prior to entering kindergarten. The table below illustrates elevated blood lead levels of three-year-old children who will be entering kindergarten by the age of five. Rates are based on all blood lead tests given through December 31, two years prior to the year the child enters kindergarten (i.e. rates for children entering kindergarten in 2007 are based on all blood lead tests through December 31, 2005).



The number of children entering kindergarten who have ever had an elevated blood lead level has decreased almost 40% over the past six years. Of the 13,044 children who will be entering kindergarten in 2007, 7.4% (968) have had a blood lead level ≥ 10 $\mu\text{g}/\text{dL}$. The benefits to the educational system as fewer and fewer children are exposed to lead each year have not yet been determined, though elevated blood lead levels have been shown to impact children's IQ and learning capabilities.

PERCENT OF CHILDREN ENTERING KINDERGARTEN WITH BLL ≥ 10 $\mu\text{g}/\text{dL}$, 2002-2007

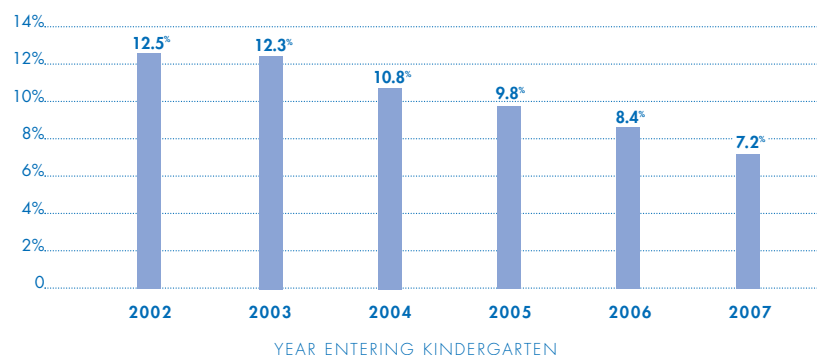


Chart Notes: 1) Data for 2002-2006 are based on all venous and capillary blood lead tests that a child had. Data for 2007 are based on venous tests and confirmed capillary tests only. 2) The percent of children entering kindergarten in 2007 who have ever been lead poisoned may be underestimated because the policies recommending a confirmatory venous follow-up for a capillary screening test ≥ 10 $\mu\text{g}/\text{dL}$ were not in place until July 1, 2004.

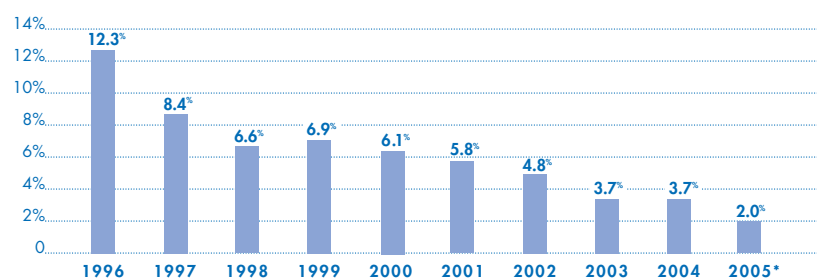


INCIDENCE OF LEAD POISONING

The Rhode Island Childhood Lead Poisoning Prevention Program (RI CLPPP) tracks and reports the number of new cases of lead poisoning (BLL ≥ 10 $\mu\text{g/dL}$) among children under six years of age who have never been previously poisoned. This statistic is known as the incidence of lead poisoning.

The proportion of new cases among children screened for lead poisoning has declined dramatically from 12.3% in 1996 to 2% in 2005. Even with an incidence of only 2%, 621 children were poisoned for the first time in 2005. Although Rhode Island is making great progress toward the elimination of lead poisoning, we must focus our efforts on primary prevention to protect more children from becoming lead poisoned in the future.

INCIDENCE OF LEAD POISONING IN RHODE ISLAND, 1996-2005



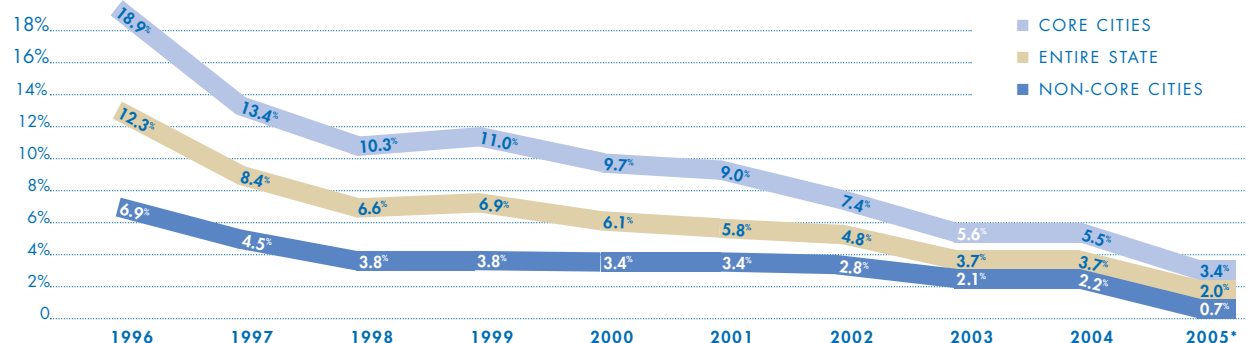
* Data reported for 2005 are based on venous tests and confirmed capillary tests only.

INCIDENCE OF LEAD POISONING BY GEOGRAPHIC LOCATION

Cities where the child poverty level is greater than 15% (according to the 2000 Census) are designated as core cities. Rhode Island currently has six core cities: Central Falls, Newport, Providence, Pawtucket, West Warwick, and Woonsocket.

Although all Rhode Island cities and towns have experienced a dramatic decline in incidence over the last ten years, cases of lead poisoning continue to be concentrated in the core cities. In 2005, the incidence of lead poisoning in the core cities was 3.4%, compared to less than 1% in the remaining cities and towns. Rhode Island must continue to focus its efforts on the core cities in order to reach elimination by the end of 2010.

INCIDENCE OF LEAD POISONING BY GEOGRAPHIC LOCATION, 1996-2005



*Data reported for 2005 are based on venous tests and confirmed capillary tests only.

INCIDENCE OF LEAD POISONING BY CITY AND TOWN 2005

City-specific incidence for previous years can be found on the website at www.health.ri.gov/lead.

CITY/TOWN	NUMBER OF CHILDREN WITH BLL \geq 10 μ g/dL FOR THE FIRST TIME	TOTAL NUMBER OF CHILDREN SCREENED WITH NO PREVIOUS CONFIRMED ELEVATED BLL	INCIDENCE
BARRINGTON	0	682	0.0%
BRISTOL	9	654	1.4%
BURRILLVILLE	8	412	1.9%
CENTRAL FALLS	41	1,114	3.7%
CHARLESTOWN	1	199	0.5%
COVENTRY	3	768	0.4%
CRANSTON	23	1,853	1.2%
CUMBERLAND	4	877	0.5%
EAST GREENWICH	5	309	1.6%
EAST PROVIDENCE	8	1,451	0.6%
EXETER	1	118	0.8%
FOSTER	1	115	0.9%
GLOCESTER	1	181	0.6%
HOPKINTON	3	213	1.4%
JAMESTOWN	1	116	0.9%
JOHNSTON	6	641	0.9%
LINCOLN	5	455	1.1%
LITTLE COMPTON	0	124	0.0%
MIDDLETOWN	1	589	0.2%
NARRAGANSETT	0	226	0.0%
NEW SHOREHAM	0	28	0.0%
NEWPORT	12	836	1.4%
NORTH KINGSTOWN	3	728	0.4%
NORTH PROVIDENCE	10	701	1.4%
NORTH SMITHFIELD	0	203	0.0%
PAWTUCKET	56	2,731	2.1%
PORTSMOUTH	3	629	0.5%
PROVIDENCE	341	7,539	4.5%
RICHMOND	0	165	0.0%
SCITUATE	3	278	1.1%
SMITHFIELD	1	323	0.3%
SOUTH KINGSTOWN	7	707	1.0%
TIVERTON	0	516	0.0%
WARREN	1	321	0.3%
WARWICK	10	1,802	0.6%
WEST GREENWICH	0	129	0.0%
WEST WARWICK	10	808	1.2%
WESTERLY	5	574	0.9%
WOONSOCKET	38	1,499	2.5%
UNKNOWN RI CITY/TOWN	0	55	0.0%
STATEWIDE	621	31,669	2.0%

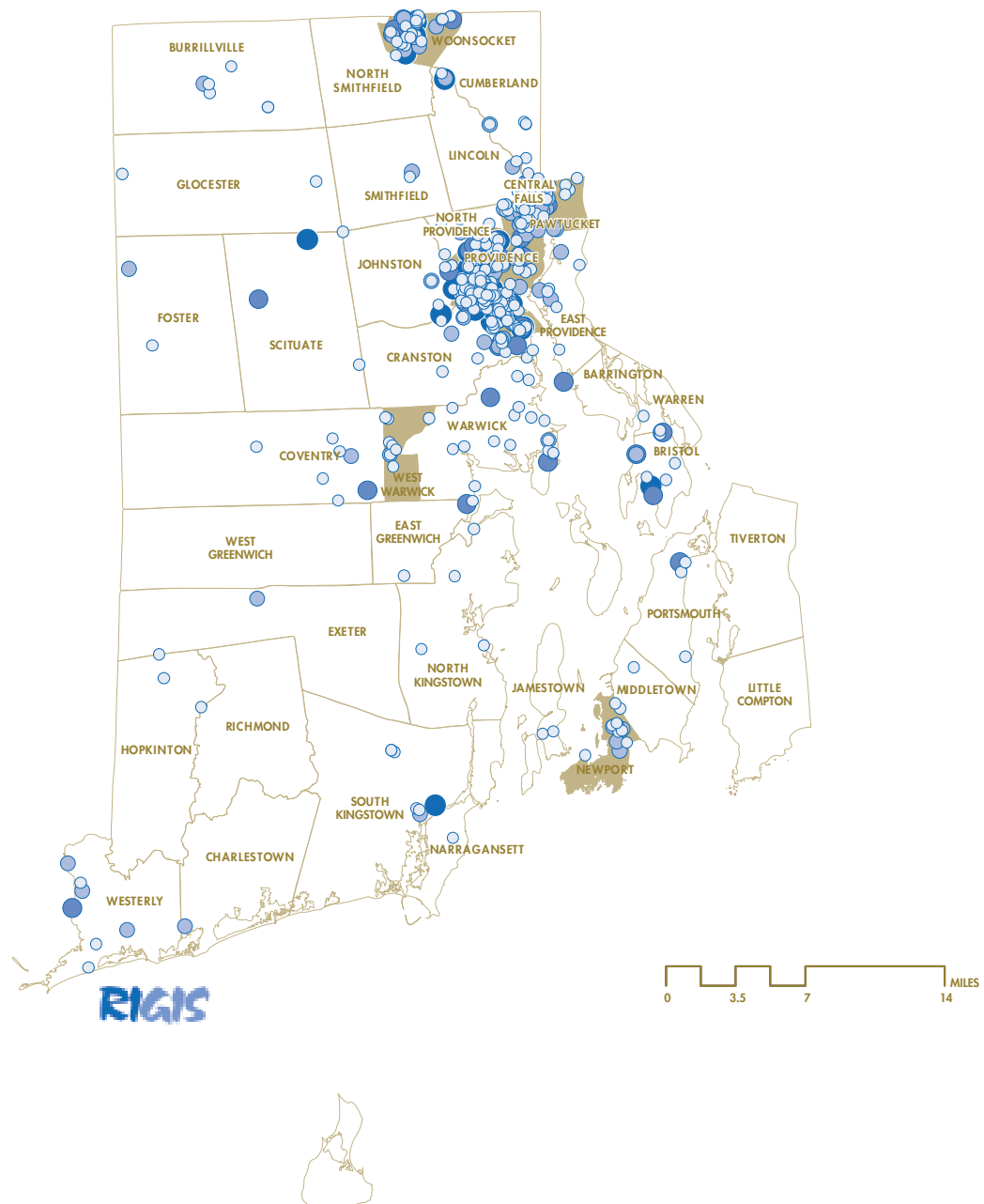
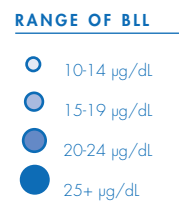
Data reported in this chart are based on venous tests and confirmed capillary tests only.

MAP OF LEAD POISONING INCIDENCE 2005

The addresses of the children found to have a blood lead level ≥ 10 $\mu\text{g}/\text{dL}$ for the first time in 2005 are plotted on the map below. Six of the 621 cases of childhood lead poisoning in 2005 are not included because the addresses were incomplete or contained errors.

Shaded areas reflect the core cities (Central Falls, Newport, Pawtucket, Providence, West Warwick, and Woonsocket).

SOURCE: RI LEAD ELIMINATION SURVEILLANCE SYSTEM

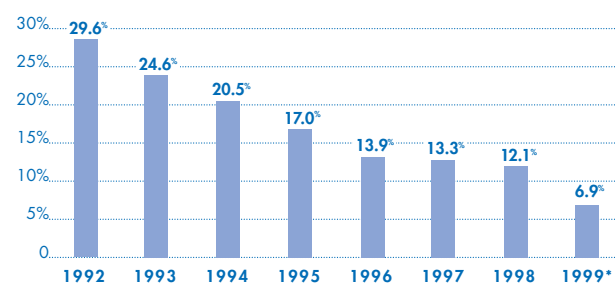


INCIDENCE OF LEAD POISONING BY BIRTH COHORT

The incidence of lead poisoning by birth cohort is defined as the proportion of children born in a given year who became lead poisoned (BLL ≥ 10 $\mu\text{g/dL}$) before the age of six.

The risk of a child becoming lead poisoned in Rhode Island has decreased over time. Approximately one in four children (29.6%) born in 1992 were lead poisoned before the age of six, compared to one in fourteen children (6.9%) born in 1999.

INCIDENCE OF LEAD POISONING BY BIRTH COHORT, 1992-1999



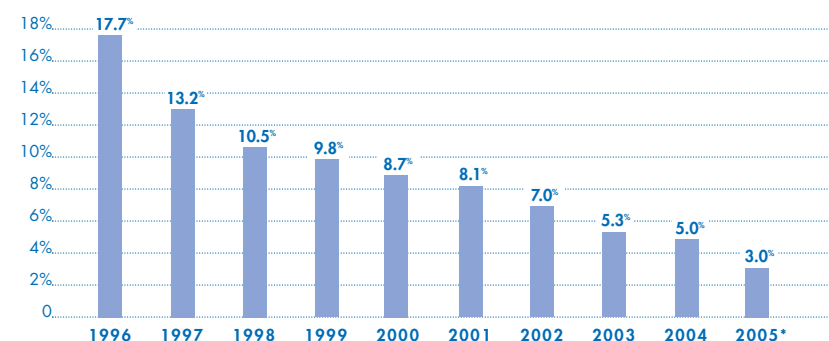
* Data reported for 1999 are based on venous tests and confirmed capillary tests only.

Chart Notes: 1) Birth cohorts beyond 1999 are not included here because those children had not yet turned six years of age by the time this report was prepared. 2) Data for birth cohorts 1992-1998 are based on all venous and capillary blood lead tests that a child had. Data for the 1999 birth cohort are based on venous tests and confirmed capillary tests only. 3) The percent of lead poisoned children in the 1999 birth cohort may be underestimated because the policies recommending a confirmatory venous follow-up for a capillary screening test ≥ 10 $\mu\text{g/dL}$ were not in place until July 1, 2004.

PREVALENCE OF LEAD POISONING IN RHODE ISLAND

Reporting prevalence of lead poisoning allows one to look at the number of children under the age of six who are lead poisoned at a given point in time. The data show a steady decline in the prevalence of lead poisoning over the last ten years, from 17.7% in 1996 to 3% in 2005. Although the prevalence of lead poisoning in Rhode Island has been steadily declining, a total of 981 children were lead poisoned in 2005. Of these, 621 were newly poisoned in 2005.

PREVALENCE OF LEAD POISONING IN RHODE ISLAND, 1996-2005



* Data reported for 2005 are based on venous tests and confirmed capillary tests only.

SERVICES OFFERED TO LEAD POISONED CHILDREN

CHILDREN WITH ELEVATED BLOOD LEAD LEVELS

An elevated blood lead level is defined as a first-time blood lead level (venous or capillary) between 10 and 19 µg/dL. Children with elevated blood lead levels in the 10-14 µg/dL range receive one set of services, and children in the 15-19 µg/dL range receive a different set of services.

BLL 10-14 µg/dL

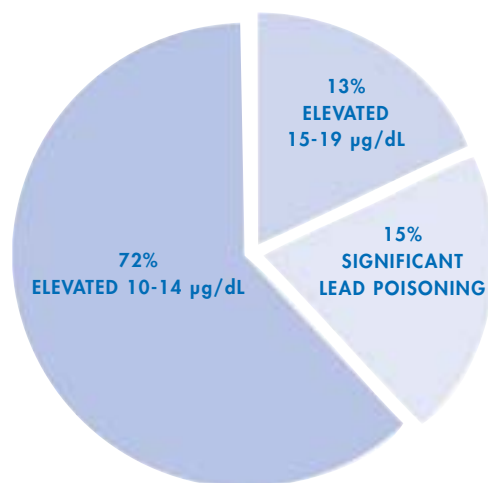
In 2005, 680 children had first-time elevated blood lead levels between 10 –14 µg/dL. The families of these children were sent educational materials, and were encouraged to contact the Family Outreach Program for a free home-based lead education visit. The Family Outreach Program provided 54 home visits in 2005. During these visits, the home visiting nurse collected dust wipe samples, which were used to evaluate the impact of education and cleaning techniques provided to the family.

At the request of the City of Providence Lead Hazard Reduction Program, the Rhode Island Childhood Lead Poisoning Prevention Program (RI CLPPP) sent letters to Providence families with children with elevated blood lead levels. The letter included educational materials and encouraged families to contact the City of Providence to request a free comprehensive environmental inspection of their apartment or home. The free lead inspection provides families with the opportunity to identify lead hazards in their apartment or home, and to learn how to minimize lead exposure among their children.

In 2005, 247 Providence families received a letter from RI CLPPP, yet only 16 families requested an inspection. The City of Providence encourages families with a child with an elevated blood lead level, who have received a letter, to call to schedule a free inspection.

BLL 15-19 µg/dL

In 2005, 124 children had first-time elevated blood lead levels between 15-19 µg/dL. The families of these children were referred to a lead center, a non-profit agency funded by Medicaid that offers comprehensive, non-medical case management services to families of children with lead poisoning. The lead centers then offered each family in-home lead education. Of the 124 cases referred, 105 (85%) accepted services, while 19 (15%) did not. The 19 cases that did not receive services either refused or could not be located by the lead center.



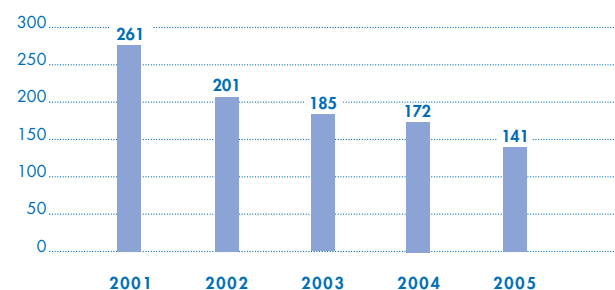
CHILDREN WITH SIGNIFICANT LEAD POISONING

Significant lead poisoning⁸ is defined as a venous blood lead level ≥ 20 $\mu\text{g}/\text{dL}$ or two blood lead levels (venous or capillary) 15-19 $\mu\text{g}/\text{dL}$, done between 90 and 365 days apart. The number of children with significant lead poisoning has been decreasing over the last five years. In 2001, there were 261 significantly lead poisoned children referred to case management, compared to 141 children in 2005. This 46% decrease in the number of significantly lead poisoned children in the last 5 years reflects the impact of primary prevention activities and various efforts to achieve elimination of lead poisoning in Rhode Island by the end of 2010.

Although the number of significantly lead poisoned children is decreasing over time, several children every year have a blood lead level ≥ 45 $\mu\text{g}/\text{dL}$. In these severe cases, the Lead Screening and Referral Guidelines recommend that a capillary test ≥ 45 $\mu\text{g}/\text{dL}$ be followed up with a venous test within 48 hours. A venous test ≥ 45 $\mu\text{g}/\text{dL}$ should be followed up with another venous test

immediately. If the follow-up test result is ≥ 45 $\mu\text{g}/\text{dL}$, an assessment of the child's home environment is conducted. Hospitalization is considered on a case-by-case basis. In cases where lead hazards are identified in the home and no alternative housing (i.e. relative's house) is available, the pediatrician usually recommends that the child be hospitalized to prevent continued exposure. The child typically remains hospitalized until a suitable home environment is found.

SIGNIFICANT LEAD POISONING CASES, 2001-2005



NUMBER OF CHILDREN WITH SEVERE LEAD POISONING ≥ 45 $\mu\text{g}/\text{dL}$, 2001-2005

	2001	2002	2003	2004	2005
VENOUS RESULTS $\geq 45\mu\text{g}/\text{dL}$	12	10	6	11	6
NUMBER OF CHILDREN HOSPITALIZED	10	6	4	4	2

In addition to medical follow up provided by the pediatrician or Lead Clinic, significantly lead poisoned children are referred to a lead center for comprehensive case management and are offered an environmental inspection of their home.



Non-medical Case Management

Of the 141 significantly lead poisoned children who were referred to lead centers in 2005, 111 (85%) accepted services. The remaining 30 families (15%) did not receive services from lead centers because either they refused or could not be located after several attempts to contact them. In 2005, 35 cases were closed by lead centers after receiving full services. Cases remained open for an average of eight and a half months.

⁸ Also known as Environmental Intervention Blood Lead Level (EIBLL)

Environmental Inspections

Families of significantly lead poisoned children are offered a comprehensive environmental lead inspection at no cost. The landlord's permission is neither required nor sought for the inspection to occur.

In 2005, 158⁹ environmental inspections were offered and inspections were performed in 101 homes. At the time this report was prepared, six inspections were pending. Of the 101 inspections performed, 98 identified lead hazards in the home.

In 2005, 20 families refused the inspection, compared to 16 in 2004 and 27 in 2003. In 19 cases, the family moved before the inspection was offered and/or performed. In these cases, the family was offered an inspection at their new address and a letter was sent to the previous address informing the new occupants that if they have children under six years of age residing at the address, they can receive a free inspection. No tenants at these previous addresses have requested an inspection.

ENVIRONMENTAL INSPECTIONS OFFERED, 2001-2005¹⁰

	2001	2002	2003	2004	2005
INSPECTIONS OFFERED	330	263	183	168	158
CHILD MOVED	30	11	21	11	19
NO RESPONSE TO LETTERS AND CALLS	20	15	16	13	12
INSPECTION REFUSED	53	49	27	16	20
PENDING INSPECTION	0	0	0	0	6
INSPECTIONS PERFORMED	227	188	119	128	101

LABORATORY SUPPORT FOR ENVIRONMENTAL INSPECTIONS

The Rhode Island Department of Health Laboratory tests various environmental samples collected during environmental inspections. The majority of analyzed samples are dust wipes, however, the laboratory maintains capacity and accreditations to analyze soil and paint chips. The laboratory tested 1,836 environmental lead samples in 2005.

The Rhode Island Department of Health Laboratory also provides analytical support to other special projects such as Keep Your Baby Lead Safe (KYBLS). This project includes the collection of dust wipes during home visits for pregnant women. In 2005, 327 dust wipes were tested in support of the KYBLS.

ENVIRONMENTAL LEAD SAMPLES ANALYZED, 2001-2005

	2001	2002	2003	2004	2005
DUST WIPES	2,847	2,767	1,964	2,079	1,670
SOIL	244	272	201	201	136
PAINT	75	48	33	39	23
OTHER	8	0	4	14	7
TOTAL TESTS PERFORMED	3,174	3,087	2,202	2,333	1,836

⁹ This includes children who were lead poisoned at the end of 2004, but who were not offered inspections until 2005.

¹⁰ Based on data generated March 13, 2006.

COMPLIANCE ASSISTANCE AND ENFORCEMENT OF ENVIRONMENTAL INSPECTIONS

The Rhode Island Childhood Lead Poisoning Prevention Program manages and implements all Environmental Intervention Blood Lead Level¹¹ comprehensive environmental inspections. Tasks include site consultation, technical assistance related to lead hazard exposures and abatement, clearance inspections, compliance audits, and administrative/judicial enforcement actions. For inspections offered in 2005, lead hazards have been completely abated in 24 of the 98 properties where hazards were identified.

Sixty-six of the 107 environmental cases (61.7%) opened in 2005 are ongoing. The Rhode Island Department of Health actively engages these property owners, as well as those owners cited in previous years, through consultation and enforcement, until lead hazard remediation is achieved.

In 2005, 14 cases were closed without complete remediation of lead hazards. In these cases, the parents of the child with an Environmental Intervention Blood Lead Level were also the owners of the property.

STATUS OF ENVIRONMENTAL CASES, 2001-2005 ¹²	2001	2002	2003	2004	2005
CASES CLOSED	205	171	105	95	41
NO LEAD HAZARDS FOUND	8	4	3	0	3
NO LONGER REGULATED	2	1	0	0	0
PARENT IS OWNER OF PROPERTY; CASE CLOSED AFTER 90 DAYS	48	46	23	29	14
LEAD HAZARD COMPLETELY ABATED	146	120	79	66	24
ABATEMENT COMPLETE EXCLUDING SOIL REMEDIATION	1	0	0	0	0
ONGOING CASES	18	17	14	33	66
ABATEMENT COMPLETE EXCLUDING SOIL REMEDIATION	5	2	3	2	3
EXTERIOR ABATED, INTERIOR PENDING	0	0	1	1	0
INTERIOR ABATED, EXTERIOR PENDING	0	1	1	8	8
ENROLLED OR ENROLLING IN A HUD PROGRAM, WAITING ABATEMENT	0	2	2	2	4
VARIOUS STAGES OF ABATEMENT	13	12	7	20	51
TOTAL CASES	223	188	119	128	107

Chart Note: Abatement is defined as any activity that reduces the risk of human exposure to lead.

¹¹ *Synonymous with significant lead poisoning.*

¹² *Based on data generated March 13, 2006.*

PUBLIC LISTS

The Lead Poisoning Prevention Act, as amended in the Lead Hazard Mitigation Law of 2002, mandates the Rhode Island Department of Health to maintain certain public lists in order to alert the public about rental properties that pose a high risk for lead poisoning. The three public lists mandated by the Law include:

- a) Highest Risk Premises** – The properties have been declared unsafe for habitation by children under age six because multiple poisonings have occurred and the property has not been made lead safe after being required by the Rhode Island Department of Health to do so. See below for more detailed information.
- b) Properties with Multiple Poisonings** – The properties have been the source of multiple lead poisonings of children, and are not currently lead safe. Specifically, the list includes addresses of properties where four or more children had their blood lead tested while living at the property, of which, at least two of these children were lead poisoned (BLL \geq 10 $\mu\text{g}/\text{dL}$).
- c) Ongoing Violations (2nd NOV)** – The Ongoing Violations (2nd NOV) Public Database contains names and current addresses of property owners that have received a first and second Notice of Violation from the Rhode Island Department of Health and have not yet corrected lead hazards on that property.

In addition, the Rhode Island Department of Health publishes the “Closed Case List” which is a searchable list that contains information about environmental inspection cases closed by the Rhode Island Department of Health since January 1993.

All of these lists are available for viewing at the Rhode Island Department of Health website at www.health.ri.gov/lead.

STATUS OF HIGH RISK PREMISES

The Rhode Island Childhood Lead Poisoning Prevention Program has identified 60 properties that meet the requirements for High Risk Premises as defined in the Lead Poisoning Prevention Act as amended in 2002.

Eleven of the sixty premises have been completely abated and achieved lead safe certification. Five premises have been razed¹⁴ and no longer present a significant lead hazard.

Thirty-eight premises have been declared Unsafe for Habitation for children under age six. To see the list of Unsafe Premises and to learn more about High Risk, please visit the website located at www.health.ri.gov/lead.

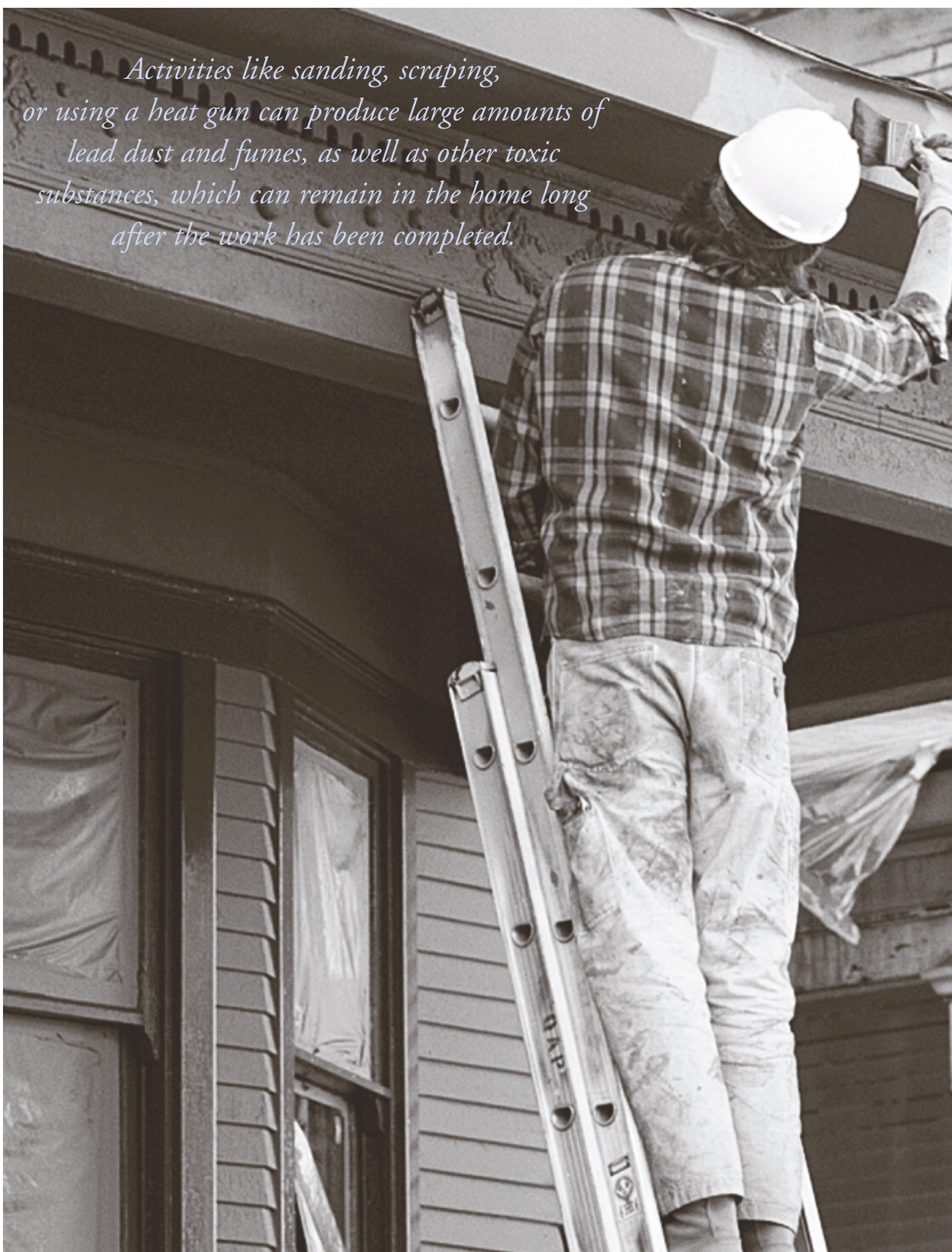
HIGH RISK CASES¹³

CASES CLOSED	19
ABATEMENT COMPLETE	11
NO LONGER REGULATED	3
PREMISE RAZED	5
ONGOING CASES	41
UNSAFE	38
OPEN	3
TOTAL CASES	60

¹³ Based on data generated March 13, 2006.

¹⁴ A premises is considered razed when all buildings or structures on the premises have been demolished or knocked down to the ground.

*Activities like sanding, scraping,
or using a heat gun can produce large amounts of
lead dust and fumes, as well as other toxic
substances, which can remain in the home long
after the work has been completed.*



WHAT TO KNOW BEFORE CONDUCTING HOME RENOVATIONS

Children face serious health consequences from exposure to lead hazards through unsafe remodeling methods. Activities like sanding, scraping, or using a heat gun can produce large amounts of lead dust and fumes, as well as other toxic substances that remain in the home long after the work has been completed.

These hazards can be avoided by hiring a certified professional who is trained in and follows lead safe work practices. Before any work begins, a professional is required by the Environmental Protection Agency (EPA) and the State of Rhode Island to provide notice to the property owner and tenants that work will be performed and hazards may result. Tenants and owners should receive the pamphlet entitled “Protect Your Family From Lead In Your Home” from the certified professional. They are asked to sign a statement acknowledging receipt of this document. The pamphlet provides detailed information on how to protect children from lead hazards. More information can be found about the EPA regulation entitled “The Lead-Based Paint Pre-Renovation Education Rule” on our website at www.health.ri.gov/lead.

Property owners can also take training courses that will help them to safely conduct small repairs on their properties. The three-hour Lead Hazard Mitigation course is approved by the state Housing Resources Commission and provides property owners with information on how to control lead hazards in their rental units. This course is required for most owners of pre-1978 rental property to be in compliance with the Lead Hazard Mitigation Law that went into effect on November 1, 2005. Property owners who want to conduct more extensive remodeling or home repair work should take the eight-hour Lead Safe Renovator/Remodeler course, which is approved by the Rhode Island Department of Health. This course teaches lead safety to workers and property owners doing more extensive repairs on their properties. For more information about either of these training courses, property owners should visit www.hrc.ri.gov or call 401-222-5323.

To learn more about how to remodel a property safely or to become certified as a lead safe remodeler/renovator, visit our website at www.health.ri.gov/lead. Pre-Renovation pamphlets are also available in the Office of Occupation Health, Environmental Lead Program, Room 206 at the Rhode Island Department of Health.



ESTIMATING THE LONG-TERM COST OF LEAD POISONING IN RHODE ISLAND

In its most recent guidance¹⁵, the Centers for Disease Control and Prevention (CDC) states that “the 2010 health objective of eliminating lead poisoning can be achieved only through primary prevention.” Primary prevention is the action of reducing or eliminating lead hazards in the environment before a child is exposed.

Lead from deteriorating paint in older housing is the most common source of lead exposure among children. While there is a great deal of attention surrounding the high costs of removing lead hazards in housing, estimated at \$7,000 per unit in the United States¹⁶, the financial consequences of *not* abating are often overlooked.

A recent study developed a formula to estimate the overall cost of lead poisoning. The formula combines the estimated costs of special education, health care, juvenile justice, and lost future income¹⁷. The methods used to derive the estimated costs are based on previous research in these areas.

Special education cost estimates were based on a 1994 study that found that 20% of children with blood lead levels > 25 µg/dL require special education for an average of three years¹⁸. The average annual cost of special education used in the calculation is \$12,733 per child¹⁷. This may be an under-estimate because it is based on 1998 dollars.

Medical costs associated with lead poisoning (i.e. lab testing, physician visits, chelation therapy) vary depending on the severity of the disease. Research conducted in 1998 estimated the cost associated with various levels of lead poisoning ranging from \$56 for a child with a blood lead level between 10-19 µg/dL to \$2,626 for a child with a blood lead level > 70 µg/dL¹⁹. These estimates are likely to be low because they are based on 1996 dollars and do not account for the long-term medical costs associated with lead poisoning, such as high blood pressure and cardiovascular disease.



15 “Preventing Lead Poisoning in Young Children, a Statement by the Centers for Disease Control and Prevention”, August 2005, page 3.

16 Grosse, S.D., T.D. Matte, J. Schwartz, and R.J. Jackson. 2002. Economic gains resulting from the reduction in children’s exposure to lead in the United States, *Environmental Health Perspectives*. 110(6): 563-569.

17 Schwartz, Joel. 1994. Societal Benefits of Reducing Lead Exposure, *Environmental Research*. 66: 105-124.

18 Korfmacher, Katrina S. July 2003. Long-term costs of lead poisoning: How much can New York save by stopping lead? www.leadfreerochester.org.

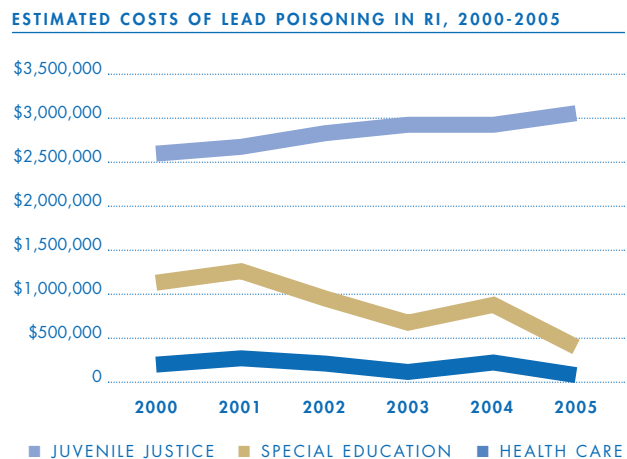
19 Kemper, AR; Bordley WC, Downs, SM, Cost-effectiveness Analysis of Lead Poisoning Screening Strategies Following the 1997 Guidelines of the Centers for Disease Control and Prevention *Arch Pediatr Adolesc Med* 1998; 152: 1202-1208.

Estimates of the amount of money spent on juvenile justice are based on the research conducted by Herb Needleman in 2002, which concluded that 10% of juvenile delinquency could be attributed to lead poisoning²⁰. The Rhode Island data used for juvenile justice costs are from the Rhode Island Department of Children, Youth and Families. These data refer to the cost of juvenile correctional services (institutional, educational, and probational), and is a conservative estimate of what juvenile justice costs, due to lead poisoning, are costing the state.

The data presented here are an estimate of what costs the state of Rhode Island would avoid on an annual basis if lead poisoning, due to deteriorating paint in older housing, were eliminated. A cost-benefit analysis has not been conducted on these estimates.

The graph shows the estimated amount of money spent on health care, special education, and juvenile justice issues as a result of lead exposure in Rhode Island homes.

Between 2000 and 2005, the estimated amount of money spent on health care and special education for children with lead poisoning has declined, while estimated juvenile justice costs have increased. On average, Rhode Island pays approximately \$4 million for these services each year. Almost three quarters of these funds are spent on juvenile justice costs.



POTENTIAL LOST FUTURE INCOME IN RHODE ISLAND

Although Rhode Island spends an average of \$4 million a year on special education, health care, and juvenile justice associated with lead poisoning, this is only a small portion of the overall cost of lead poisoning. The majority of the cost can be attributed to lost future income.

Research suggests that elevated blood lead levels are correlated with a decrease in IQ points. Economic research indicates that lower IQs are associated with reduced earning potential over the course of one's life. Two researchers have developed methods to estimate the impact that IQ loss, as a result of lead poisoning, has on lifetime earning potential. The first model yielded an estimate of potential lost future income in Rhode Island at \$38 million²¹ a year, while the second model yielded an estimate of \$60 million²² a year. Lost income also translates into lost tax money for the state. If you assume a 10% income tax, Rhode Island could have approximately \$3-6 million additional dollars each year if lead poisoning were eliminated.

20 Needleman, H.L. 2002. Bone lead levels in adjudicated delinquents: A case control study. *Neurotoxicology and Teratology* 24: 711-717.

21 Landrigan, P.J., C.B. Schechter, J.M. Lipton, M.C. Fabs, and J. Schwartz. 2002. Environmental pollutants and disease in American children: Estimates of morbidity, mortality, and costs for lead poisoning, asthma, cancer, and developmental disabilities. *Environmental Health Perspectives*. 110(7): 721-728.

22 Grosse, S.D., T.D. Matte, J. Schwartz, and R.J. Jackson. 2002. Economic gains resulting from the reduction in children's exposure to lead in the United States. *Environmental Health Perspectives*. 110(6): 563-569.



RACE AND ETHNICITY

Collecting race and ethnicity data is challenging. The Rhode Island Childhood Lead Poisoning Prevention Program (RI CLPPP) relies on laboratory providers to ask patients for race and ethnicity information when they collect blood samples for lead testing. Laboratories fail to collect race for approximately 50% of samples. Ethnicity data are missed on a higher percentage of samples. As a result of the incomplete data each year for the last five years, lead poisoning rates by race and ethnicity are not reported here.

In 2004, in an effort to learn more about why these data are not being collected regularly, RI CLPPP conducted a survey among laboratory professionals and people receiving laboratory services. Although clients indicated that they are comfortable filling out the form themselves, or being asked directly about their race and ethnicity, laboratory professionals reported that they are uncomfortable asking clients about their race and ethnicity. One way to gather the information from clients without making laboratory professionals uncomfortable would be to have clients complete the race and ethnicity questions themselves.

The results of the survey were summarized in a report, “Understanding Barriers that Prevent the Accurate Collection of Race and Ethnicity Data,” which has been distributed to all licensed laboratories within the state. The report recommends support from management for the collection of race and ethnicity data, staff training, and parent and patient education. The full report is available on the web at www.health.ri.gov/lead. To facilitate and support the recommendations in the report, RI CLPPP in collaboration with the Office of Minority Health, has developed a brochure titled, “Why Do Health Forms ask for Ethnicity and Race?” The brochure will be piloted at several laboratories and health care facilities in the spring of 2006. Efforts will continue to be made by RI CLPPP to identify partnerships to conduct larger scale efforts around laboratory data collection methods.



APPENDIX

Rhode Island Childhood Lead Poisoning Prevention Program Advisory Committee Members, 2005

LAST NAME	FIRST NAME	AGENCY
BRAGANTIN	FRANK	FERLAND CORPORATION
BYRNE	NOLAN	DEPARTMENT OF HUMAN SERVICES
CAMPAGNA	KRISTINE	VNA CARE OF NEW ENGLAND
CHIONCHIO	MARIA	CHILDREN'S FRIEND AND SERVICE
COOPER	PATRICE	UNITED HEALTHCARE
DASILVA	GILSON	BLUE CROSS BLUE SHIELD RHODE ISLAND
DAVIS	GAIL	HASBRO PRIMARY CARE
DELOSSANTOS	DORIS	DEPARTMENT OF ADMINISTRATION
DILLON	CHRISTOPHER	CITY OF PROVIDENCE CODE ENFORCEMENT
DUNNE	PAULA	WESTBAY COMMUNITY ACTION PROGRAM
ERICKSON	DOROTHY	NEIGHBORHOOD HEALTH PLAN OF RHODE ISLAND
FRIEDMANN	HELENA	CHILDHOOD LEAD ACTION PROJECT
GIBREE	JEANNE	UNITED HEALTHCARE
GORHAM	CHRIS	RHODE ISLAND HOUSING
GREENE	LYNDA	PROVIDENCE COMMUNITY CENTERS
JOHNSTON	DAVE	CITY OF PROVIDENCE, DEPARTMENT OF PLANNING/DEVELOPMENT
KERNAN	SHARON	DEPARTMENT OF HUMAN SERVICES
KINEAVY	ANN	RHODE ISLAND HOSPITAL LEAD CLINIC
KINSEY	HEATHER	WESTBAY COMMUNITY ACTION PROGRAM
KUE	SIMON	HOUSING RESOURCES COMMISSION
LOGAN	JOHN	BROWN UNIVERSITY
LONDONO	CHRISTINA	FAMILY SERVICE OF RHODE ISLAND
MARTINEAU	LESLIE	LADY OF FATIMA HOSPITAL
PACCIA	CHRISTINE	COORDINATED HEALTH PARTNERS
PAINE	VIRGINIA	WOONSOCKET HEAD START
PAIVA	SUZY	ST. JOSEPH HEALTH SERVICES
PRINCIPE	ITA	RHODE ISLAND HOUSING
SCHRAEDER	CAROL	WARWICK LEAD HAZARD REDUCTION PROGRAM
SHAWCROSS	NOREEN	OFFICE OF HOUSING AND COMMUNITY DEVELOPMENT
STAUF	MONICA	RHODE ISLAND ASSOCIATION OF REALTORS
TOURANGEAU	JUNE	ST. JOSEPH HOSPITAL LEAD CLINIC
VIVIER	PATRICK	RHODE ISLAND HOSPITAL
WALSH	CATHY	RHODE ISLAND KIDSCOUNT
WINTER	JAN	BLACKSTONE VALLEY COMMUNITY ACTION PROGRAM

GLOSSARY

Abatement

An activity that reduces the risk of human exposure to lead.

BLL

Blood lead level.

Elevated Blood Lead Level

One blood lead test result between 10-19 µg/dL.

EIBLL

Environmental Intervention Blood Lead Level.

Synonymous with Significant Lead Poisoning.

Incidence

The proportion of new cases of a disease that develops during a specified period of time among the population at risk for developing the disease. For example, the incidence of lead poisoning in Rhode Island in 2005 is the proportion of children with a first-time elevated blood lead level among those at risk for developing lead poisoning (i.e. children under age 6 who have never been lead poisoned in the past).

Lead Center

A non-profit agency funded by Medicaid that offers comprehensive, non-medical case management services to families of children with lead poisoning.

Lead Safe

A condition where a surface, material, substance, or medium (water, soil, dust) has environmental lead levels in the permissible range, as defined by the Rhode Island regulations, and/or does not contain lead in a condition that is readily accessible to children under six years of age. A lead-safe condition does not require lead hazard reduction, but does require routine maintenance and an annual re-inspection.

Lead Hazard Mitigation Law

Legislation introduced by Senator Thomas Izzo, which passed and became law in June 2002. The law modified the Lead Poisoning Prevention Act and established standards for the maintenance of pre-1978 rental property in Rhode Island.

NOV

Notice of Violation. A notice for owners of regulated facilities to abate any significant environmental lead hazards in accordance with the Regulations upon receipt of notice of significant environmental lead hazards following an environmental lead inspection or lead assessment.

Prevalence

The proportion of people in a population who have a given disease at a specific point in time. For example, prevalence of lead poisoning in 2005 is the proportion of children who had an elevated blood lead level in 2005.

Razed

Demolished or leveled to the ground. Premises are no longer regulated by RI CLPPP if all buildings and structures on the premises are razed.

RI CLPPP

The Rhode Island Childhood Lead Poisoning Prevention Program. The program is a collaboration of three Divisions in the Rhode Island Department of Health: Family Health, Environmental Health, and the Laboratory.

Screening

Mandatory test that involves collecting a blood sample from a child under the age of six who does not show any signs or symptoms of lead poisoning, either through a finger stick or a venipuncture, and then analyzing the sample to determine the amount of lead in the child's blood.

Significant Lead Poisoning

A venous blood lead level ≥ 20 µg/dL in a child under six years of age, or two BLLs (capillary or venous) 15-19 µg/dL from a child under six years of age done between 90 and 365 days apart.

µg/dL

Micrograms per deciliter of blood. The measurement used to estimate the amount of lead in a sample of blood. This measure is sometimes represented as mcg/dL.